Fire Program Analysis – Preparedness Module
Smokejumper Deployment

Topic: Smokejumper Deployment within the Preparedness Module

Issue: Deployment of smokejumper fire resources within FPA-PM as ground fire resources is required to adequately model their contribution for Initial Response (IR). The system should deploy an effective and cost efficient number of smokejumpers to the modeled fire events.

Background: Phase 1 prototype Fire Planning Units (FPU) have completed analysis using FPA-PM software version 1.1 which included within the system design deployment of smokejumpers based upon total line production needed to maximize Weighted Acres Managed per cost constraint for the FPU looking across the entire fire season.

The model analyzes smokejumpers in groups from 2 through 24 line producers including two spotters. The spotters are included to ensure the model captures the deployment cost for a platform load of smokejumpers.

Following a consultation meeting with the Interagency Smokejumper representatives it was determined for modeling purposes the maximum number of smokejumpers that can be deployed by a single aircraft per day is 24. The model needs to know how many smokejumpers a single aircraft can deploy in one day before the model buys a new aircraft if more smokejumpers are needed and available for containment. A simplifying assumption was made to use a generic or conceptual smokejumper aircraft.

In FPA-PM versions 1.1 and 1.2, all 24 smokejumpers deployed at the same time and thus their line production capability begins at that same time. This over simplification has resulted in the mix of fire resources represented in FPU analysis outcomes are not representative of the fire resource mix one would expect for a FPU.

New approach for FPA-PM version 1.3:

Aircraft assumptions: The process to be included within version 1.3 will use a generic or conceptual smokejumper platform to deploy smokejumpers from a Dispatch Location to a FMU. This platform is described as having the capacity to deliver eight smokejumpers and will have two spotters on board. The spotters are assumed not to jump but spot for reloads. The reason the spotters are included as staffing on the platform is to ensure the model is capturing the deployment cost per platform load of smokejumpers. FPA assumes the smokejumper platform travels at a speed of 200 miles per hour (175 knots). FPA-PM is using statute miles rather than nautical miles to determine distance from a Dispatch Location to a Work Load Point.

Smokejumper Base Facility Capacity: SJ Base facility capacity options will be a SJ Base with eight smokejumpers and sixteen smokejumpers and twenty four smokejumpers. Only if facility capacity for more than eight has been defined will there be a possible reload. A facility capacity of 24 would consider 8, 16, and 24 smokejumper staffing.

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Relates to PCR 109, Shuttle Smokejumpers
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For more information, see the FPA web site fpa.nifc.gov

Delays and Arrival Times: The time from dispatch notification until the smokejumpers are on the modeled fire event (MFE) and are producing containment is described in a separate white paper and is briefly recapped here. Mobilization Delay (includes dispatch decision delay, resource response delay, and resource setup delay) and Travel time from Dispatch Location to the FMU RFE, and Jumper Delay, and Walk-in Delay are totaled to develop the Arrival Time for the first two Smokejumpers.

For the second two of the eight smokejumpers on the plane there will be a Jumper Delay (JD) and Walk-in Delay (WD) added prior to line production. The JD and WD will be added to each of the third and fourth sticks of smokejumpers until full line production of the eight smokejumpers is achieved. See Figure 1 below. Jumper Delay will consist of a two minute delay. The optimal delay time between the first and second stick of two smokejumpers leaving the aircraft is one and half minutes and the longest time is three minutes. For the purpose of Lookup Dataset version 1.3, two minutes will be used for the Jumper Delay.

Reload and Deploy: Once all eight smokejumpers have been deployed the platform will return to the Dispatch Location to reload with smokejumpers provided there has been Smokejumper Base (SJ Base) facility capacity defined to support a reload of smokejumpers.

Should the fire be contained prior to the reload of smokejumpers then the reload will not take place.

If the fire is not contained prior to the reload and there is money available within the cost constraint to provide a reload of smokejumpers as defined at the Dispatch Location through the use of SJ Base facility capacity, the platform will reload and return to the FMU with eight additional smokejumpers. The timeline for line production of the next set of eight smokejumpers will include Travel Time from the representative fire event back to the Dispatch Location and return to the MFE, Jump Delay, followed by the Walk in Delay for the first pair of jumpers followed by a successive Jump and Walk in Delays until all eight are on the MFE and the line production for all sixteen smokejumpers is being applied toward the containment effort. This process will repeat itself should the fire require additional line production prior to reaching containment if there is SJ Base facility capacity defined for the Dispatch Location and there is money available within the cost constraint.

Cost Accumulation: While en-route back to the MFE if the fire event is contained the event will be charged for the deployment cost of both platform loads of eight smokejumpers but will not include the line production of the second load of eight. The deployment costs for two smokejumper spotters are included in calculating the total deployment costs for the smokejumper resource.

Fixed costs will be defined for the 8, 16, or 24 smokejumper increments within the system. For example; if the optimal solution includes 16 smokejumpers then the fixed costs to support that increment will be added, and can be reported.

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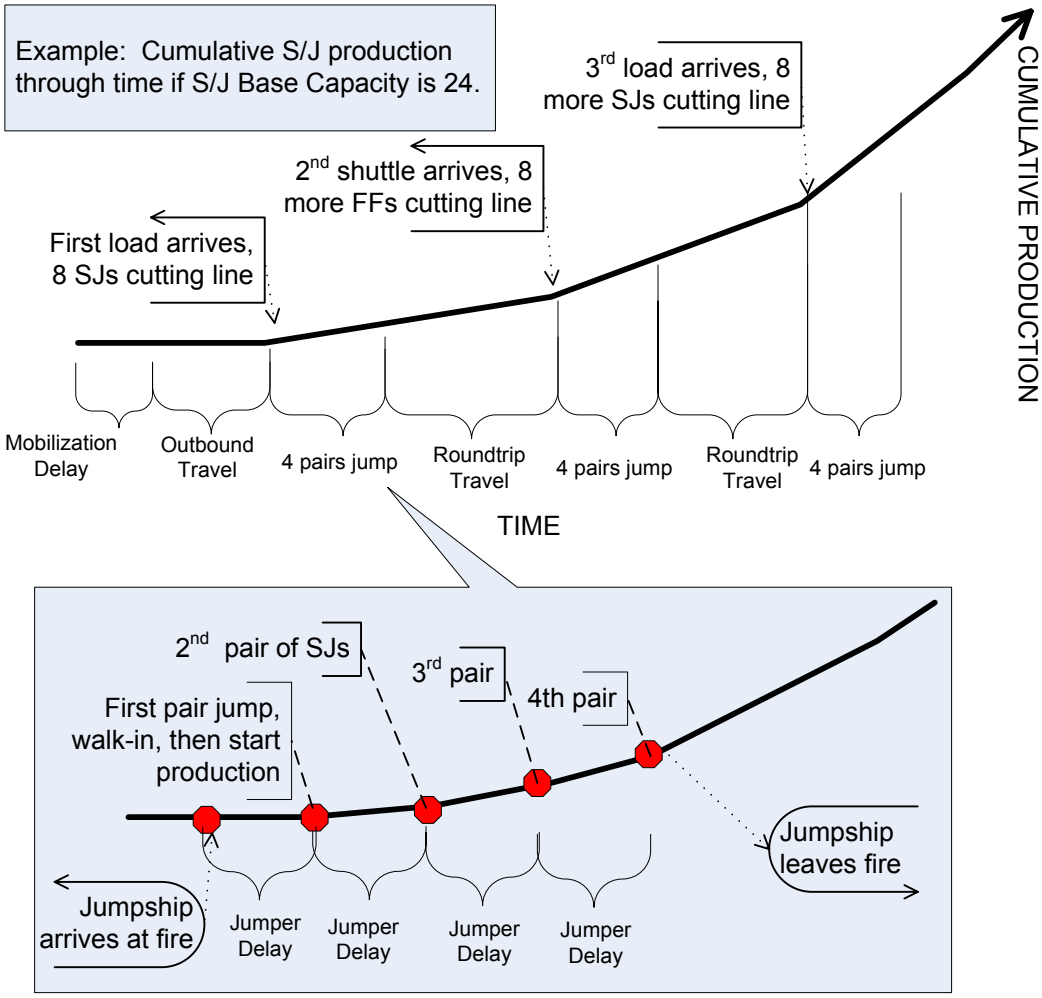

Figure 1

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